

Title	A NEW PONTONIINID SHRIMP, PONTONIA SPIGHTI SP. NOV., ASSOCIATED WITH A NEWLY DESCRIBED ASCIDIAN FROM THE PACIFIC COAST OF COSTA RICA (DECAPODA, NATANTIA, PONTONIINAE)
Author(s)	Fujino, Takahiro
Citation	PUBLICATIONS OF THE SETO MARINE BIOLOGICAL LABORATORY (1972), 19(5): 293-301
Issue Date	1972-03-08
URL	http://hdl.handle.net/2433/175728
Right	
Type	Departmental Bulletin Paper
Textversion	publisher

A NEW PONTONIINID SHRIMP, *PONTONIA SPIGHTI* SP. NOV.,
ASSOCIATED WITH A NEWLY DESCRIBED ASCIDIAN
FROM THE PACIFIC COAST OF COSTA RICA
(DECAPODA, NATANTIA, PONTONIINAE)

TAKAHIRO FUJINO

Zoological Laboratory, Kyushu University, Fukuoka

With 3 Text-figures

The species of the genus *Pontonia* LATREILLE, 1829 have the habit of being associated commensally with ascidians, bivalves or gastropods. Recently in a newly described ascidian, *Rhopalaea birkelandi* TOKIOKA, 1971, an interesting commensal shrimp of *Pontonia* was detected. This solitary ascidian was taken on the Pacific coast of Costa Rica in February-March, 1970 by Drs. C. BIRKELAND and T. M. SPIGHT, and was forwarded to Dr. T. TOKIOKA for identification. After a close examination of the shrimp it was revealed to be undescribed, and was designated as *Pontonia spighti* in honour of Dr. Tom M. SPIGHT, one of the collectors.

Of ten species of this genus, known from American waters, seven have been recorded from the west coast of America. And the present species bears the closest resemblance to *Pontonia pusilla* HOLTHUIS, 1951 and also to *P. californiensis* RATHBUN, 1902 among them. In this short communication the morphological description of the new species and the differences from the two above-mentioned species are given.

The author expresses his cordial thanks to Dr. T. TOKIOKA of the Seto Marine Biological Laboratory of Kyoto University for granting a facility to examine the interesting shrimp and for his unfailing interest during this study. The author's thanks are further extended to Drs. C. BIRKELAND and T. M. SPIGHT of the Smithsonian Biological Research Center of Canal Zone for rendering the host specimen.

Pontonia spighti sp. nov.

(Figs. 1-3)

Material examined. 1 ovig. ♀, Playas del Coco, Pacific coast of Costa Rica, shallow water of sublittoral zone, Feb.-Mar., 1970, Drs. C. BIRKELAND and T. M. SPIGHT leg.

Description of holotype (ovigerous female). A small-sized depressed body with large robust chelae of second pereopods.

The rostrum (Fig. 1 A, B) is depressed and considerably curved downwards, reaching approximately the end of the second segment of the antennular peduncle. In dorsal view it is narrow and acute at the apex, being feebly broadened in the middle. The upper surface is flat and entirely smooth. The lower border has a distinct median longitudinal carina. In lateral view this carina becomes slightly shallower distally to form a rather bluntly truncate apex, ventrally with a minute point and a few thin setae.

The carapace is depressed and glabrous. The inferior orbital angle is produced into an obliquely directed triangular process. No antennal spine is present. The anterolateral angle is narrowly expanded forward to form a triangular lobe with a round end.

The abdomen has the pleura of all the somites smoothly rounded. The pleura of the first three somites are expanded broadly for holding ova. The sixth somite is somewhat longer than the fifth, and is angled posterolaterally.

The telson (Fig. 1 C) is broad, approximately twice as long as its maximum breadth, and one and a half times the length of the sixth abdominal somite. The lateral margins are gently curved and convergent uniformly posteriorly. The dorsal surface is flat and armed with two pairs of very long and stout spines near the lateral margins; the anterior pair is shorter than the posterior pair, not reaching the level of the base of the posterior spines, and is situated close to the anterior end of the telson; it measures one-fifth as long as the telson. The posterior pair lies somewhat anterior to the middle of the telson; it is stronger and longer and measures about one-third of the maximum length of the telson. On the posterior terminal end there are two pairs of slender subequal spines which are more or less longer than the anterior pair of the dorsal spines, in addition a few fine setae there.

The eyestalks (Fig. 1 B) are short and stout, becoming slender distally. The cornea is hemispherical, shorter and feebly narrower than the stalk.

The basal segment of the antennular peduncle slightly overreaches the anterior margin of the cornea and has a stylocerite broad and rather blunt. The lateral margin is broadly convex around the middle. The anterolateral angle is strongly produced forward to a narrow blunt process, which almost reaches the anterior margin of the second antennular segment. Both distal segments are short and broad and subequal in length. The upper antennular flagellum is short, fused basally for three robust joints. The longer free ramus consists of four segments and subequal to the fused portion in length. The shorter free ramus is reduced to only one joint. The lower flagellum is slender and a little shorter than the upper flagellum, being made up of six joints.

The antennal scale (Fig. 1 D) feebly exceeds the second segment of the antennular peduncle. It is broad and ovate, in length somewhat less than twice the maximum breadth around the middle. The outer lateral margin is distinctly convex terminating

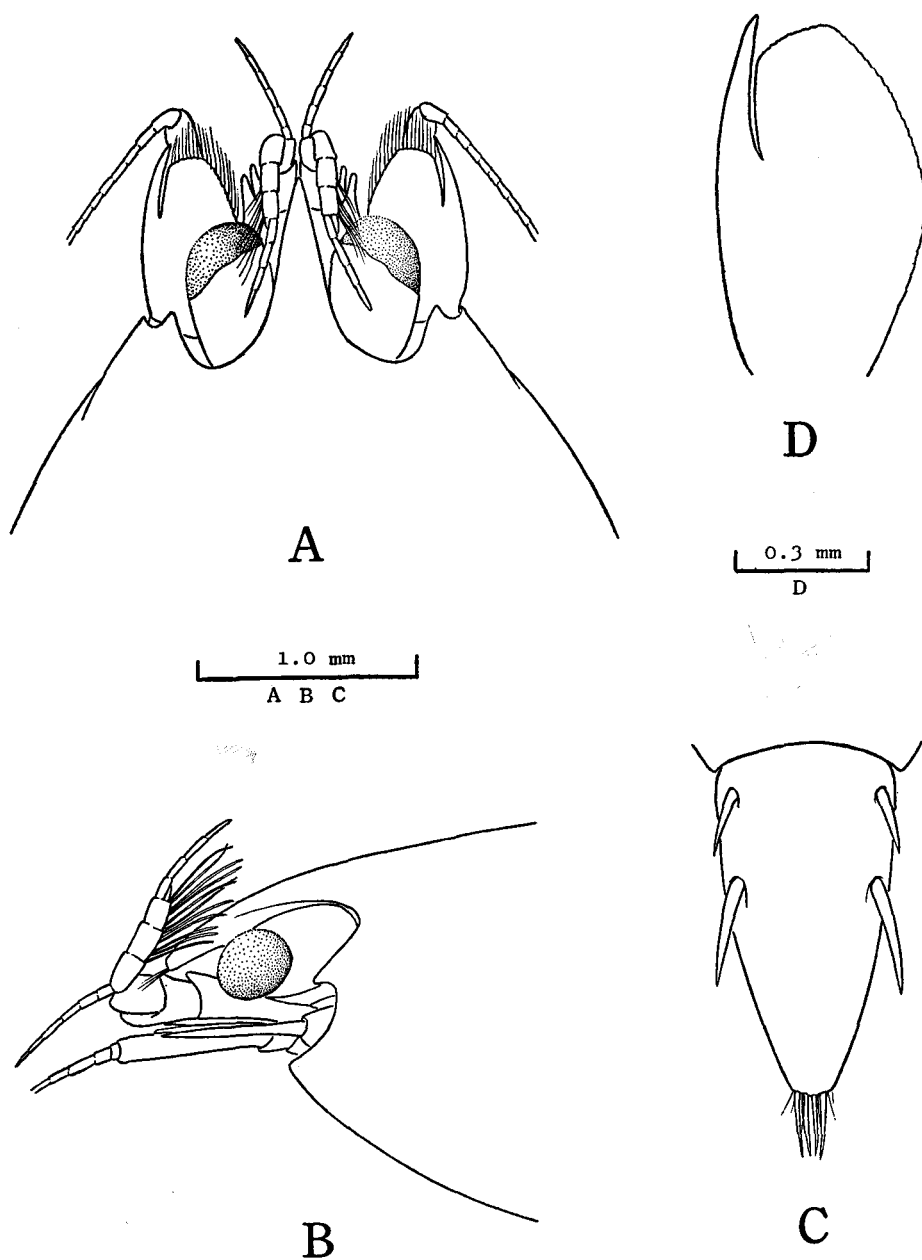


Fig. 1. *Pontonia spighti* sp. nov., holotype, ovigerous female. A, anterior part of body in dorsal view; B, anterior part of body in lateral view; C, telson; D, antennal scale.

in an excessively strong and recurved tooth which slightly outreaches the rather obliquely truncated anterior margin of the broad lamella. The basicerite of the antennal peduncle is short, without exterior spine. The carpocerite is depressed and becomes broader anteriorly, exceeding the end of the antennular peduncle.

The incisor process of the mandible (Fig. 2 A) is slender and laminar, with five small denticles at the distal end; four minute spines are present on the posterolateral edge. The molar process is stout, with five unequal, lobular, blunt processes, two of which bear a tuft of bristles on their inner edge. The palp of the maxillula (Fig. 2 B) is crooked and bifid distally. The upper lacinia is slightly recurved; several teeth and spines are present along the distal border, and coarse setae are also set thickly distally. The lower lacinia is much broader than the upper, being broadened distally; the distal portion is covered with thickly settled long setae. The endite of the maxilla (Fig. 2 C) is divided for a third of its length, the lower narrower part being provided with several long plumose setae. The palp is developed, broad and obtuse at the apex. The endite of the first maxilliped (Fig. 2 D) is somewhat elongate, not separated into the basis and the coxa by a notch. The palp is normal with a round tip. The moderately developed exopod has a narrow caridean lobe. The epipod is developed and considerably broad with a slight notch. The second maxilliped (Fig. 2 E) is typical of the genus. The flagellum of the exopod is medium in development. The triangular epipod is present, but it lacks a podobranch. The third maxilliped (Fig. 2 F) is broad and stout. The ultimate segment is much narrower than the proximal segments, with thick setae over the surface. The penultimate segment is slightly longer than the ultimate. The antepenultimate segment is somewhat broader than the penultimate, two and a half times the length of the penultimate. These segments bear long setae especially along the inner border. The exopod feebly exceeds the end of the antepenultimate segment. A rigid and round epipod and a small vestigial arthrobranch are present.

The first pereopods (Fig. 3 A, B) are slender, reaching beyond the antennal scale by a half of the length of the carpus. The fingers are slender and become thinner distally, being nearly as long as the palmar portion. The cutting edges are unarmed. Thick setae are set on the fingers distally. The carpus is subcylindrical and more or less longer than the chela. The merus is compressed, subequal in length to the carpus. The ischium is short and robust.

The second pereopods (Fig. 3 C-F) are rather similar to each other, though a little unequal in size and in form and arrangement of teeth on the finger. The major pereopod on the right side has a large and robust chela with the curved and tapering finger about two-thirds as long as the palm. The inner lateral border of the palm forms a distinct carina in almost overall length. The upper surface of the chela appears rugose under high magnification. The movable finger is stout, with the strongly hooked blunt tip. It has two strong, unequal and triangular teeth in the proximal half on the cutting edge; the distal tooth is placed at the middle and much stronger

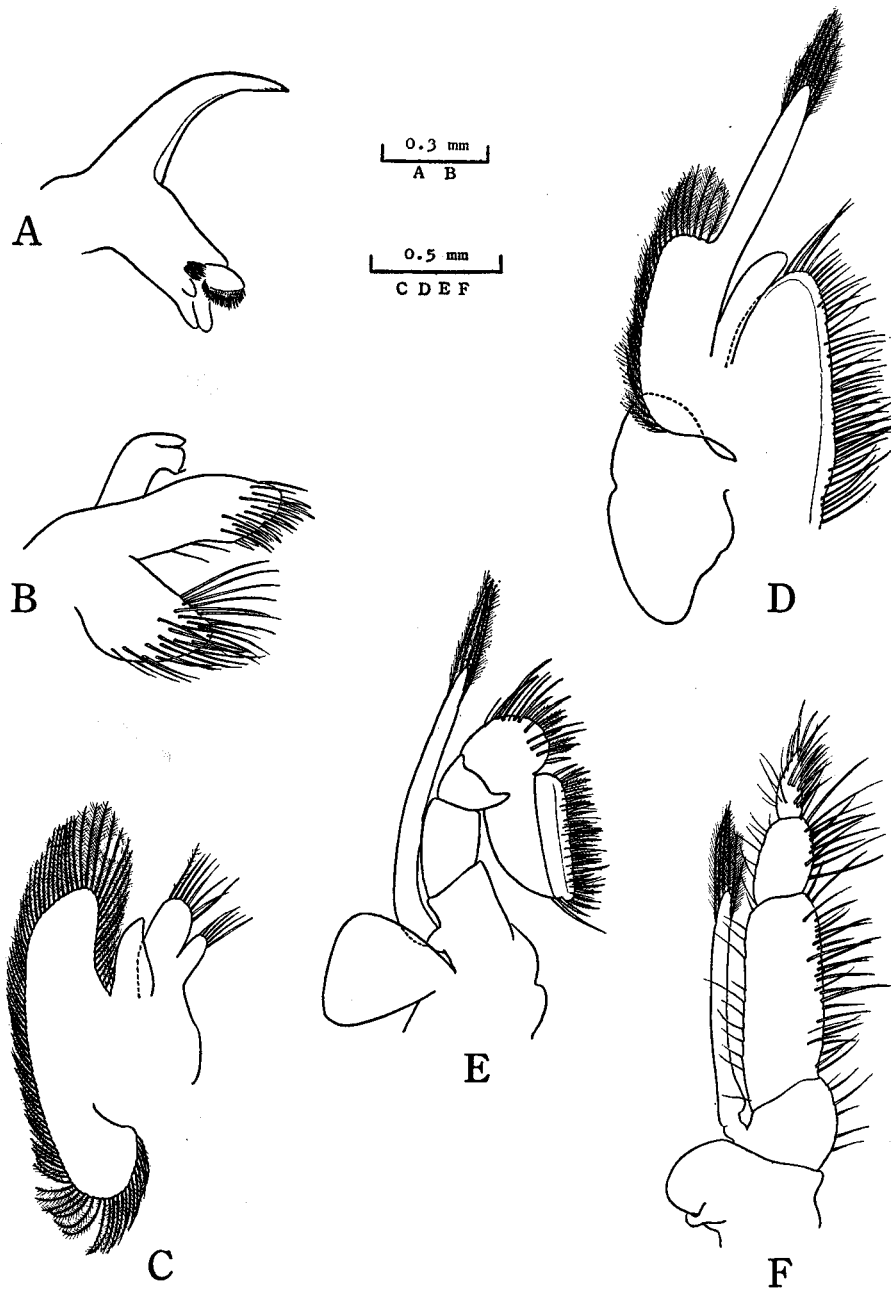


Fig. 2. *Pontonia spighti* sp. nov., holotype, ovigerous female, mouthparts. A, mandible; B, maxillula; C, maxilla; D, first maxilliped; E, second maxilliped; F, third maxilliped.

than the proximal one. The fixed finger is armed with three strong teeth on the cutting edge, which decrease in size proximally; the distal tooth is on the distal third, while the two proximal teeth are situated rather close to each other and separated from the distal tooth by a large concavity which will hold the distal tooth on the movable finger. The cutting edges are furnished with many tufts of hairs. The carpus is short and expanded distally, with the distal margin unarmed. The merus is somewhat longer than the carpus, broadest distally, and with both the anterior and the posterior borders smooth. The ischium is slightly shorter than the merus, unarmed and broader distally. The chela of the minor pereiopod is thinner in comparison with the larger. The anterior and posterior borders are nearly parallel to each other. As in the major pereiopod the movable finger is strongly hooked distally. There are three rather incomplete teeth on the proximal third of the cutting edge. On the cutting edge of the fixed finger several irregular, much smaller teeth are definable proximally. Setae are sparsely dispersed on the fingers. The surface of the chela looks finely rugose under high magnification. The inner border bears a rather sharp carina. The carpus, merus and ischium are all unarmed, and similar in shape and proportional length to those of the major pereiopod.

The ambulatory pereiopods are robust. In the third pereiopod (Fig. 3 G, I) the dactylus is robust and rather elongate, about three times as long as the maximum breadth. The anterior margin is gently curved and ends in a recurved claw terminally. An accessory tooth of a significant size is near the distal end of the posterior border, thus giving the dactylus a bifid appearance. The margin posterior to the accessory tooth is slightly convex. Hairs are set thickly over the posterior portion of the segment. The propodus slightly tapers distally, more than three and a half times as long as the dactylus. Except for a pair of small spines on the posterodistal edge the posterior margin is smooth. The carpus is short. The merus and the ischium are robust, the former being somewhat shorter than the propodus. The fourth pereiopod well resembles the third. The fifth pereiopod (Fig. 3 H, J) is slenderer than the anterior ones. The dactylus is broader in the middle. The propodus is provided with a series of several, coarse, spinose setae distally and a pair of and two separate single spines posteriorly. The ischium and the merus are slenderer.

The pleopods are as usual.

The uropods are elongate oval, being slightly longer than the telson. The outer margin of the exopod is gently curved and terminates in a minute spine.

The eyed ova are rather large and measure 0.5×0.4 mm at the maximum.

Measurements (in mm).

holotype (ovig. ♀)

carapace length	2.8	length of major second pereiopod	3.5
telson length	1.6	length of minor second pereiopod	3.0
length of antennal scale	0.8		

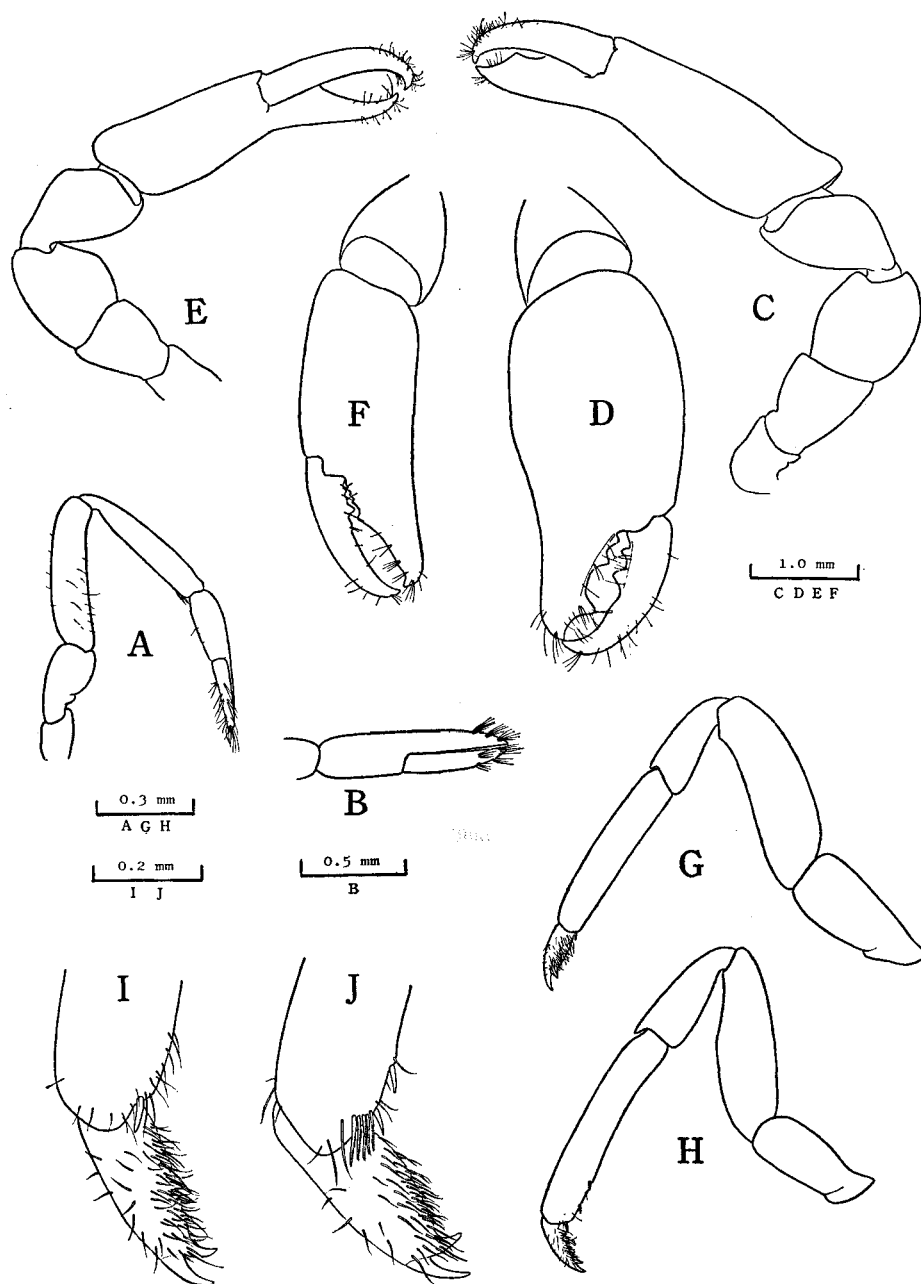


Fig. 3. *Pontonia spighti* sp. nov., holotype, ovigerous female. A, first pereiopod; B, chela of first pereiopod; C, major second pereiopod; D, chela of major second pereiopod; E, minor second pereiopod; F, chela of minor second pereiopod; G, third pereiopod; H, fifth pereiopod; I, dactylus of third pereiopod; J, dactylus of fifth pereiopod.

Colouration. No data are available as to the live specimen, the specimen was pale yellowish brown when it was taken out of the host.

Host. A single specimen was found in the branchial sac of the ascidian, *Rhopalaea birkelandi* TOKIOKA, 1971, recently described as a new species.

Type. A single ovigerous female (holotype) will be deposited at the Seto Marine Biological Laboratory, registration number, SML Type no. 239.

Remarks. From American waters ten species of the genus *Pontonia* are known, seven from the west and four from the east coast, including one distributed on both the coasts (HOLTHUIS, 1951, 1952). The present species is most closely related to *Pontonia pusilla* HOLTHUIS, 1951 of these American forms, whose type locality is the Pacific coast of Panama to Ecuador, but whose host is unknown. Both the species are characterized by possessing two pairs of large dorsal spines on the telson, the anterior pair of which fails to reach the base of the posterior pair. In addition, these species have such common characters as that the antennal spine is absent, the lateral final tooth of the antennal scale is large and strong, and no teeth are found on the lower margin of the rostrum. The present species, however, is distinguished from *P. pusilla* by the characteristic regards as follows:

1. The rostrum is much slenderer in the present species than in *P. pusilla*.
2. The posterior pair of dorsal spines on the telson is longer and stronger than in *P. pusilla*; the spines are a quarter of the telson length in *P. pusilla*, while about a third in the present species.
3. The posterior terminal spines of the telson are much slenderer and longer in the present species than in *P. pusilla*. The outer and inner pairs of the spines are almost equal in length and thickness in the present species, while the inner is shorter and slenderer in *P. pusilla*.
4. The second pereopods of the present species are dissimilar in size and shape. The arrangement of the teeth on the fingers, as noted in the description, differs considerably on respective sides. In *P. pusilla* the second pereopods are equal in size and shape, and the cutting edges have two rather small teeth on either side.
5. The incisor process of the mandible of the present species has four small spines distolaterally besides five small teeth distally. In *P. pusilla* the accessory teeth are not seen at all.
6. In the present species the epipod of the first maxilliped is feebly bilobed, but it is entirely smooth in *P. pusilla*.

The present species also represents a close resemblance to the Californian species, *Pontonia californiensis* RATHBUN, 1902, which was known in association with an ascidian, *Phallusia vermiformis* RITTER. The former is in harmony with the latter in having the unequal second pereopods with the upper and the lower carinae. However, in *P. californiensis* the anterior pair of dorsal spines on the telson are much longer and reach the base of the posterior pair. The lateral final tooth of the antennal scale is

much smaller in *P. californiensis* than in the present species. In *P. californiensis* the fingers of the second minor pereopod are distinctly gaping and the carinae are minutely serrated. In addition, the anterolateral portion of the basal segment of the antennular peduncle is much broader and shorter in *P. californiensis* than in the present species.

REFERENCES

- HOLTHUIS, L. B., 1951. A general revision of the Palaemonidae (Crustacea Decapoda Natantia) of the Americas. I. The subfamilies Euryrhynchinae and Pontoniinae. Allan Hancock Found. Publ., Occ. Pap., 11: 1-332, pls. 1-63.
- , 1952. The Decapoda of the Siboga Expedition. Part XI. The Palaemonidae collected by the Siboga and Snellius Expeditions with remarks on other species. II. Subfamily Pontoniinae. Siboga Exped., Monogr. 39 (a10): 1-253, figs. 1-110, 1 tab.
- ТОКИОКА, Т., 1971. A new species of *Rhopalaea* from the Pacific coast of Costa Rica (Tunicata, Ascidiacea). Publ. Seto Mar. Biol. Lab., 19: 119-122, fig. 1.